



U.S. Department  
of Transportation  
**Pipeline and  
Hazardous Materials  
Safety Administration**

400 Seventh Street, S.W.  
Washington, D.C. 20590

**COMPETENT AUTHORITY CERTIFICATION  
FOR A TYPE B(U)  
RADIOACTIVE MATERIALS PACKAGE DESIGN  
CERTIFICATE USA/0459/B(U)-96, REVISION 7**

**REVALIDATION OF CANADIAN COMPETENT AUTHORITY  
CERTIFICATE CDN/2062/B(U)-96**

This certifies that the radioactive material package design described is hereby approved for use within the United States for import and export shipments only. Shipments must be made in accordance with the applicable regulations of the International Atomic Energy Agency<sup>1</sup> and the United States of America<sup>2</sup>.

1. Package Identification - MDS Nordion Inc. F147(96) Transfer Case, Serial Nos. 61 and higher.
2. Package Description and Authorized Radioactive Contents - as described in Canada Certificate of Competent Authority CDN/2062/B(U)-96, Revision 6 (attached).
3. General Conditions -
  - a. Each user of this certificate must have in his possession a copy of this certificate and all documents necessary to properly prepare the package for transportation. The user shall prepare the package for shipment in accordance with the documentation and applicable regulations.
  - b. Each user of this certificate, other than the original petitioner, shall register his identity in writing to the Office of Hazardous Materials Technology, (PHH-23), Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation, Washington D.C. 20590-0001.
  - c. This certificate does not relieve any consignor or carrier from compliance with any requirement of the Government of any country through or into which the package is to be transported.

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<sup>1</sup> "Regulations for the Safe Transport of Radioactive Material, 1996 Edition (Revised), No. TS-R-1 (ST-1, Revised)," published by the International Atomic Energy Agency(IAEA), Vienna, Austria.

<sup>2</sup> Title 49, Code of Federal Regulations, Parts 100-199, United States of America.

**CERTIFICATE USA/0459/B(U)-96, REVISION 7**

- d. Records of Quality Assurance activities required by Paragraph 310 of the IAEA regulations<sup>1</sup> shall be maintained and made available to the authorized officials for at least three years after the last shipment authorized by this certificate. Consignors in the United States exporting shipments under this certificate shall satisfy the applicable requirements of Subpart H of 10 CFR 71.
4. Marking and Labeling - The package shall bear the marking USA/0459/B(U)-96 in addition to other required markings and labeling.
5. Expiration Date - This certificate expires on February 28, 2011.


This certificate is issued in accordance with paragraph 808 of the IAEA Regulations and Section 173.473 of Title 49 of the Code of Federal Regulations, in response to the January 31, 2007 petition by MDS Nordion, Ottawa, Ontario, and in consideration of other information on file in this Office.

Certified By:



**Feb 16 2007**

(DATE)

 Bob Richard  
Deputy Associate Administrator for Hazardous Materials Safety

Revision 7 - Issued to revalidate Canadian Certificate of Approval  
CDN/2062/B(U)-96, Revision 6.



Canadian Certificate No. <b>CDN/2062/B(U)-96 (Rev.6)</b>	Issue Date <b>Jan-29-2007</b>	Expiry Date <b>Feb-28-2011</b>	CNSC File <b>30-A2-89-0</b>
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## **Certificate for Transport Package Design**

The transport package design identified below is certified by the Canadian Nuclear Safety Commission pursuant to paragraph 21(1)(h) of the *Nuclear Safety and Control Act* and Section 7 of the *Packaging and Transport of Nuclear Substances Regulations*, and to the 1996 Edition (Revised) of the *IAEA Regulations for the Safe Transport of Radioactive Material*.

### **REGISTRATION OF USE OF PACKAGES**

All users of this authorization shall register their identity in writing with the Canadian Nuclear Safety Commission prior to the first use of this authorization and shall certify that they possess the instructions necessary for preparation of the package for shipment.

### **PACKAGE IDENTIFICATION**

Designer: **MDS Nordion**  
Make/Model: **F147(96) Transfer Case, Serial Nos. 61 and higher**  
Mode of Transport: **Air, Sea, Road, Rail**

### **IDENTIFICATION MARK**

The package shall bear the competent authority identification mark "**CDN/2062/B(U) - 96**".

### **PACKAGE DESCRIPTION**

The packaging consists of a type F147 Transfer Case in conjunction with a fire shield with two additional lead shield ends installed as shown on Drawing No. F614701-001(D). The containment system consists of welded capsules and the 250 mm thick steel encased, lead shielded inner containment.

The Transfer Case is covered on the top and sides by a shield constructed to provide fire and impact limiting properties and on the bottom by a steel encased transite sheet attached to the shipping skid. The outer box of the shield is reinforced sheet metal and envelopes a 45 mm thick layer of cedar lined by a sheet of 12.7 mm plywood. A nominal 12.7 mm air gap separates the plywood from a blanket of 12.7 mm refractory material which is bonded to a sheet metal box that forms the inside surface of the fireshield. Additional steel covered lead shield ends may be welded to the forward and rear sides of the outer fire shield casing to increase shielding.

An illustration of the package with the added lead shield ends is shown on attached Drawing No. F147(96), (Issue 2).



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The mass of the package, without the additional steel covered lead shield ends, is 2000 kg. The configuration of the package, with the additional steel covered lead shield ends, is as follows:

Shape: <b>Rectangular</b>	Shielding: <b>Lead</b>
Mass: <b>2050 kg</b>	Outer Casing: <b>Steel</b>
Length: <b>1010 mm</b>	Height: <b>1156 mm</b>
Width: <b>873 mm</b>	Diameter: <b>n/a</b>

### **AUTHORIZED RADIOACTIVE CONTENTS**

This package is authorized to contain not more than 555 TBq (15,000 Ci) of Cobalt-60 metal, doubly encapsulated in C-146 and C-151 welded type 316L stainless steel capsules or in other similar capsules which meet special form requirements. The decay heat output from this material shall not be greater than 231 W;

or

not more than 296 TBq (8000 Ci) of Cesium-137 as Cesium chloride doubly encapsulated within C-161 welded stainless steel capsules, Type 1 to 8. The decay heat output from this material shall not be greater than 42 W.

### **QUALITY ASSURANCE**

Quality assurance for the design, manufacture, testing, documentation, use, maintenance and inspection of the package shall be in accordance with:

- MDS Nordion Document Nos. IN/QA 0224 Z000 (6)\*, "Radioactive Material Transport Package Quality Plan" and IN/QA 0562 A000 (3)\*, "Sealed Source Quality Plan"
- MDS Nordion Document No. IN/DS 1889 F147 (2) Design, Manufacturing and Operating Specification for the F-147 Transport Packages
- Canadian Packaging and Transport of Nuclear Substances Regulations
- IAEA Regulations
- \* or latest current revision

### **SHIPMENT**

The preparation for shipment of the package shall be in accordance with:

- MDS Nordion Document No. IN/DS 1889 F147 (2) "Design, Manufacturing and Operating Specification



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for the F-147 Transport Packages"

- Canadian Packaging and Transport of Nuclear Substances Regulations
- IAEA Regulations

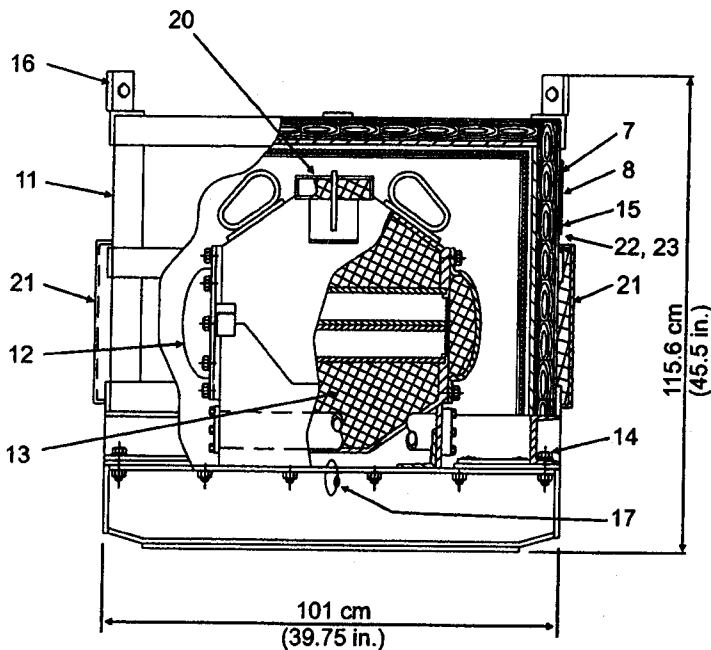
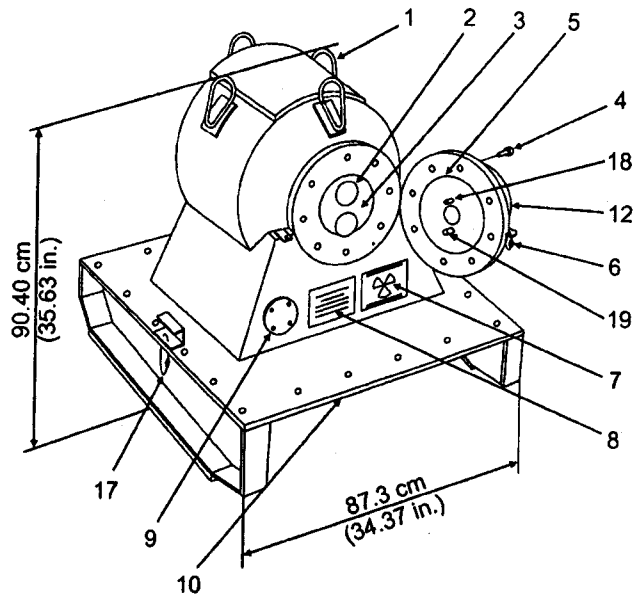
The average surface heat flux of the package with 555 TBq of Co 60 is  $46 \text{ W/m}^2$ . For heat fluxes exceeding  $15 \text{ W/m}^2$ , supplementary arrangements must be made with the carrier to ensure adequate heat dissipation.

This certificate does not relieve the shipper from any requirement of the government of any country through or into which the package will be transported.

A. Régimbald  
Designated Officer pursuant to paragraph 37(2)(a)  
of the Nuclear Safety and Control Act

## Parts List

1. Lifting handles
2. Source drawer
3. Dummy drawer
4. Door screws: 5/8-11 x 1" LG socket head (16)
5. Neoprene gasket (2)
6. Lead wire seal (2)
7. Radiation caution plate (3): on two opposite sides of overpack, and one on base of transfer case
8. Shipping container identification label (3): on two opposite sides of overpack, and one on base of transfer case
9. Spare dummy drawer (optional)
10. Transite: 1.27 cm (0.5 in.) steel encased
11. Fireshield: outer - steel frame and box  
inner - plywood, kaowool, steel box
12. Lead shielded door (2)
13. Lead shielding, steel encased
14. Fireshield bolt, washer, nut 1/2-13 x 2.5" LG hex head (20)
15. Radioactive Category label (2): on two opposite sides
16. Fireshield lifting handles with cover plates installed
17. Lead wire seal (1)
18. Drawer locator pin (2)
19. Drawer stop pin (2)
20. Lead shield, top
21. Lead shield, ends
22. UN Number label (2): on two opposite sides, next to Radioactive Category labels
23. Air Eligibility Plate (2): on two opposite sides, next to UN Number label



## Notes

1. CNSC certification CDN/2062/B(U)-96
2. Conforms to IAEA type B(U)-96 requirements
3. Lead shielding 22.9 cm (9 in.)
4. Projected floor loading: 2,325 kg/m<sup>2</sup> (476 lb/ft<sup>2</sup>)
5. Approved contents:  
15,000 curies cobalt-60  
8,000 curies cesium-137
6. Total weight - 2,050 kg (4,520 lbs)
7. WARNING  
Cover plates must be in place on the lifting handles on the fireshield to prevent their use for lifting or tie-down during transit. The package should be lifted by platform truck or fork lift truck.
8. Packaging serial numbers 61 & up.

**MDS Nordion**

447 March Road, P.O. Box 13500  
Kanata, Ontario, Canada, K2K 1X8  
Tel: (613) 592-2790 · Fax: (613) 592-6937

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## TITLE

**F-147 (1996) Standard Round Drawer Transfer Case with Fireshield**

REF. IN/SS 1911 F147-96

REVISED Dec. 03 DCN A2490-D-16A

DATE February 2003

No. **F-147 (96)**

ISSUE

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**CERTIFICATE NUMBER:** USA/0459/B(U)-96, Revision 7

**ORIGINAL REGISTRANT(S):**

Mr. Marc-Andre Charette  
Manager, Regulatory Affairs  
MDS Nordion  
447 March Road  
Ottawa, K2K 1X8  
CANADA